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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/694,242	10/27/2003	John Steele Debenham	05015.0375U3	3740

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EXAMINER	
KRISHNAN, GANAPATHY	

ART UNIT	PAPER NUMBER
1623	

DATE MAILED: 09/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/694,242	DEBENHAM ET AL.	
	Examiner	Art Unit	
	Ganapathy Krishnan	1623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 2, 6, 7, 9, 13 and 14 recite the term material. It is not clear if the term material refers to the disaccharide or trisaccharide or the anhydride or any other material that contains these three substances. For the purpose of prosecution it is interpreted to mean either.

Claims 2 and 9 recite, "wherein the disaccharide or trisaccharide material comprises cellobiose". Since cellobiose is a disaccharide, it is not clear what "disaccharide or trisaccharide material comprises cellobiose" means. A similar recitation is seen in claim 18. Clarification is needed.

Claims 3, 10 and 19 recite α-content. It is not clear what α-content means. If applicants intend α-anomer content the claim should be reworded to convey the same. The recitation is treated as α-anomer content.

In claims 6-7 and 13-14, the limitations are drawn to an anhydride material. It is not clear if the said anhydrides are part of the composition since these anhydrides are recited as reagents in the process steps of claim 1. Since claim 1 is a product-by-process claim, it will be treated as a product claim. Hence the said anhydrides are not considered as part of the composition.

Claim 17 is a substantial duplicate of claim 1. Both claims are drawn to a disaccharide or a trisaccharide mixed fatty acid ester having the same percentage range for the C_9 ester groups and the C_6, C_7, C_8, C_{10}, C_{11} or C_{12} ester group. Claim 1 is a product by process claim. Patentable weight is not given to the process steps in claim 1. Claims 18-20 are also duplicates of claims 2-4 respectively. Claims 17-20 should be cancelled.

Claims that depend from a rejected base claim that are unclear/indefinite are also rendered unclear/indefinite and are rejected for the same reasons.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-7 and 17-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Franklin et al (US 6,248,312).

Claim 1 is drawn to a composition consisting essentially of a disaccharide or trisaccharide mixed fatty acid ester having a C_9 ester group and one or more of C_6, C_7, C_8, C_{10}, C_{11} or C_{12} ester groups wherein the mixed fatty acid ester has a degree of substitution of from about 50% to 99% of the C_9 ester group and from about 1% to about 50% of the C_6, C_7, C_8, C_{10}, C_{11} or C_{12} ester group. Dependent claims 2-5 are drawn to the disaccharide being cellobiose; the alpha content being greater than 75% and the fatty acid ester having less than about 15 wt.% of

branched fatty acid ester groups and the composition not containing trifluoroacetic acid. Claims 6 and 7 are drawn to the percentage of fatty acid anhydride used in the process for making the composition of claim 1. Claim 17 is drawn to a composition consisting essentially of a disaccharide or trisaccharide mixed fatty acid ester having a C_9 ester group and one or more of C_6, C_7, C_8, C_{10}, C_{11} or C_{12} ester groups wherein the mixed fatty acid ester has a degree of substitution of from about 50% to 99% of the C_9 ester group and from about 1% to about 50% of the C_6, C_7, C_8, C_{10}, C_{11} or C_{12} ester group. Claims 18-20 recite limitations that are same as dependent claims 2-4.

Franklin et al teach a composition comprising esterified cellobiose (col. 24, lines 10-30). The cellobiose has C_9 and C_{10} ester groups in equimolar ratio since Franklin et al teach that the "Esterified C_9/C_{10} denotes cellobiose esterified with an equimolar mixture of mixture of nonanoic acid and decanoic acid" (col. 24, lines 11-13). This constitutes the composition of instant claim 1. Claim 1 is a product-by-process claim. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). The cellobiose used in the composition of Franklin is a disaccharide (limitation of claim 2). The cellobiose esters have an alpha content of more than 75% (col. 18, lines 20-45; limitation of claim 3). Since the acids used in the esterification of cellobiose are nonanoic and decanoic acid, which are straight chain acids, the cellobiose mixed ester has no branching in the ester chain (less than 15 wt. % of branched

fatty acid ester groups; limitation of claim 4). Even though the procedure of Franklin recites the use of trifluoroacetic anhydride, which could be a source of trifluoroacetic acid, the esterified cellobiose was recrystallized 4 times (col. 18, 7-9 and lines 17-19). This should have removed trifluoroacetic acid impurity in the ester. Hence, the composition of Franklin et al is free of trifluoroacetic acid (limitation of claim 5).

Claims 6 and 7 are drawn to the composition of claim 1. The limitations drawn to the C_9 fatty acid anhydride material and the non-C_9 fatty acid anhydride material are not given patentable weight since they are both drawn to the limitations that are in the process steps of claim 1 and claim 1 is treated as a product claim. Hence, the teaching of Franklin et al meets the limitations of claims 6,7 and also claims 17-20.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 8-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Takada et al (liquid Crystals, 1995, 19(4), 441-448).

Claim 8 is drawn to a composition consisting essentially of a disaccharide or a trisaccharide C_9 fatty acid ester having a degree of substitution of from about 50% to about 99% of the C_9 ester group. Dependent claims 9-16 recite limitations drawn to the composition of claim 8 wherein the di or trisaccharide is cellobiose, wherein the alpha-content is greater than about 75%, wherein the C_9 fatty acid ester has less than 15 wt. % of branched fatty acid ester

groups, wherein the composition does not contain trifluoroacetic acid, limitation drawn to the content of the anhydride material used and the degree of substitution of the C_9 fatty acid ester.

Takada et al teach a composition comprising the C_9 fatty acid ester of alpha-cellobiose that has been recrystallized more than three times from THF/methanol mixture. The recrystallization mixture comprising the cellobiose C_9 fatty acid ester in THF/methanol after the third recrystallization constitutes the composition of claim 8 (page 442, left column, section 2.2). Claim 8 is a product by process claim. Hence, how the compostion is prepared is not given patentable weight. It is treated as a product claim. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). The cellobiose in Takada's composition is a disaccharide (limitation of claim 9) and the corresponding C_9 ester obtained has an alpha content of 97% (page 442, right column, Table 1, sample α-9). Since Takada teaches the esterification using the corresponding alkanoic acid (in the instant case nonanoic acid-a linear C_9 acid) the composition of Takada has no branched fatty acid ester groups. This meets the limitation of claim 11 (less than 15 wt. % of branched fatty acid ester group). Even though the procedure of Takada recites the use of trifluoroacetic anhydride, which could be a source of trifluoroacetic acid, the esterified cellobiose was recrystallized more than 3 times (page 442, right column, section 2.2). This should have removed trifluoroacetic acid impurity in the ester. Hence, the composition of Takada is free of trifluoroacetic acid (limitation of claim 12). Since

the cellobiose C_9 ester is prepared using an excess of the corresponding acid (page 442, section 2.2; 8 eq. to the hydroxy groups) the cellobiose should have a degree of substitution of from 50% to about 90% (limitation of claim 16). The composition of Takada et al also meets the limitations of claims 13-15. Claims 13-15 are drawn to the composition of claim 8 but recite limitations drawn to the anhydride material used in the process step of claim 8. Hence this limitation is not given patentable weight.

Conclusion

Claims 1-20 are rejected

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ganapathy Krishnan whose telephone number is 571-272-0654. The examiner can normally be reached on 8.30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, James O. Wilson can be reached on 571-272-0661. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GK

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